

Interactive comment on “Evaluation and modeling of the size fractionated aerosol number concentration measurements near a major road in Helsinki” by T. Hussein et al.

T. Hussein et al.

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In the first place, we thank all reviewers for their interactive and valuable comments. The second reviewer also reviewed the related article Pohjola et al. (ACPD 7, 2819–2856), which is partly written by same co-authors as this article. Although these two papers share the common roadside site (Herttoniemi), the projects and measurement time periods are different: this study (Hussein et al.) was within the SAPPHIRE project during August–September 2003 and January–February 2004 whereas Pohjola et al. was within the LIPIKA project during February 2003. Here we also utilized the continuous aerosol particle measurement at the background urban site of Kumpula, which was not the case for Pohjola et al. The main objective of our study is to investigate the particle number size distributions nearby a major road versus a background site and also to

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utilize a similar model approach to the one presented by Pohjola et al., but only as an example model application exercise. In contrast to Hussein et al paper, the main object of the Pohjola et al study is to model the evolution of particle number size distribution at several distances from the major road. The Hussein et al paper also uses some model developments that have been presented for the first time in Pohjola et al., as well as the input data and source term modelling that has been measured/developed in the LIPIKA project (addressed by Pohjola et al.).

In summary, we feel that these two manuscripts are clearly related to each other (as pointed out by a referee); however, the experimental data is completely different, and the objectives and scope of the two papers are substantially different. After discussion with the common co-authors in both articles, the intention is now to re-submit revised versions of these articles as a double article PART-I (Pohjola et al.) and PART-II (Hussein et al.); somewhat more detailed arguments will be pointed out in the reply to the reviewer comments of the Pohjola et al. article. The revised versions do not differ in the main objectives from original their submission, but we will point out the common areas and differences more clearly in the revised submission as a double article.

The revised manuscript PART-I will describe the model development with some comparisons between sectional (UHMA) and multi-mono (MONO32) approaches; this was useful in synthesizing the discussion and conclusions of the two papers. The model evaluation in PART-I (Pohjola et al.) will be applied to the more comprehensive measurements within the LIPIKA project. Article PART-II (Hussein et al.) will focus on the traffic related aerosol particle number size distributions by using the measurements within the SAPPHIRE project and the continuous measurements at the background site of Kumpula. PART-II will also briefly describe the model development, which is mainly presented in PART-I, and modeling will be applied here as a numerical exercise, limited only to a couple of cases (in contrast to a substantially larger number of modeled cases at various distances from the road in the Pohjola et al. paper). I, personally and after studying carefully the Pohjola et al. article, will make sure that these points

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will be clear in the revised version for the next submission.

Finally, I was personally as the main co-author in this article, aware about the fact that the model development presented by Pohjola et al. was not yet published at the time when we prepared our article. For that reason, we did refer here to the Pohjola et al. article, although we should have done that, and explained clearly the differences and common characteristics of these two related manuscripts. In the revised version we have tried to make this clear.

Please note that a point-to-point reply for the reviewers' comments will be submitted separately.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 4001, 2007.

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